

This listing of claims will replace all prior versions and listings of claims in this application:

b.) Listing of Claims

1. (currently amended) A spectroscopy system, comprising:
a source system for generating light to illuminate a sample over a broadband;
a tunable Fabry-Perot filter system for spectrally filtering the light generated
by the source system to generate a tunable signal to irradiate the sample;
a tap for diverting a portion of the signal from the Fabry Perot tunable filter to
a detector; and
a detector system for detecting the light filtered by the tunable Fabry-Perot
filter from the sample,
wherein at least two of the source system, tunable Fabry-Perot filter system,
and the detector system are integrated together.
2. (currently amended) A spectroscopy system as claimed in claim 1, wherein
the source system comprises a ~~broadband~~ semiconductor diode source.
3. (Original) A spectroscopy system as claimed in claim 1, wherein the source
system comprises multiple, multiplexed diode chips, operating at different
wavelength ranges.
4. (Original) A spectroscopy system as claimed in claim 1, wherein the source
system comprises at least one superluminescent light emitting diode (SLED)
source.
5. (Original) A spectroscopy system as claimed in claim 1, wherein the tunable
Fabry-Perot filter system comprises multiple, parallel filters.
6. (Original) A spectroscopy system as claimed in claim 1, wherein the tunable
Fabry-Perot filter system comprises multiple filters for filtering different
wavelength ranges.

7. (currently amended) A spectroscopy system, comprising:
a source system for generating light to illuminate a sample;
a tunable Fabry-Perot filter system for filtering the light generated by the
source; and
a detector system for detecting the light filtered by the tunable Fabry-Perot
filter from the sample,
wherein at least two of the source system, tunable Fabry-Perot filter system,
and the detector system are integrated together; and
as ~~claimed in claim 1~~, wherein the tunable Fabry-Perot filter system comprises
multiple, serial filters.
8. (currently amended) A spectroscopy system as claimed in claim 1 7, wherein
the ~~tunable Fabry-Perot filter system comprises~~ multiple, serial filters ~~with~~ have
different free spectral ranges.
9. (Original) A spectroscopy system as claimed in claim 1, wherein the detector
system comprises multiple detectors responsive to different wavelength ranges.
10. (Original) A spectroscopy system as claimed in claim 1, wherein the source
system and the Fabry-Perot filter system are integrated on a common bench, in a
common package.
11. (Original) A spectroscopy system as claimed in claim 1, wherein the Fabry-
Perot filter system and the detector system are integrated on a common bench, in
a common package.
12. (Original) A spectroscopy system as claimed in claim 1, wherein the source
system, Fabry-Perot filter system, and the detector system are integrated on a
common bench, in a common package.
13. (Original) A spectroscopy system as claimed in claim 1, wherein the Fabry-
Perot filter system comprises at least one MEMS tunable filter.

14. (Original) A spectroscopy system as claimed in claim 1, further comprising an isolation system between the source system and the tunable Fabry-Perot system for preventing backreflections in to the source system.
15. (currently amended) A spectroscopy system as claimed in claim 1, wherein:
the source system comprises a broadband source for generating broadband light; and
~~the tunable Fabry-Perot filter spectrally filters the broadband light from the broadband source to generate a tunable signal to irradiate the sample.~~
16. (Previously presented) A spectroscopy system as claimed in claim 15, wherein the broadband source comprises a light emitting diode.
17. (Previously presented) A spectroscopy system as claimed in claim 15, wherein the broadband source comprises a superluminescent light emitting diode.
18. (Previously presented) A spectroscopy system as claimed in claim 15, wherein the broadband source comprises an array of diodes.
19. (currently amended) A spectroscopy system as claimed in claim ~~15~~ 1, wherein the ~~broadband~~ source system and the Fabry Perot filter system are installed in common on an optical bench.
20. (cancelled)
21. (currently amended) A spectroscopy system as claimed in claim ~~20~~ 1, further comprising a stable spectral reference interposed between the detector and the tap.
22. (Previously presented) A spectroscopy system as claimed in claim 21, wherein the reference is a gas cell.
23. (Previously presented) A spectroscopy system as claimed in claim 21, wherein the reference is an etalon.

24. (currently amended) A spectroscopy system, comprising:
a source system for generating light to illuminate a sample over a broadband;
a tunable Fabry-Perot filter system for spectrally filtering the light generated
by the source to generate a tunable signal to irradiate the sample;
a detector system for detecting the light filtered by the tunable Fabry-Perot
filter from the sample;

~~as claimed in claim 15, further comprising:~~

a controller for modulating the ~~broadband~~ source system; and
a detector for detecting the tunable signal from the Fabry Perot filter; and
a lock-in amplifier responsive to the controller for locking onto a modulation
of the tunable signal;
wherein at least two of the source system, tunable Fabry-Perot filter system,
and the detector system are integrated together.

25. (cancelled)

26. (cancelled)

27. (cancelled)

28. (cancelled)

29. (cancelled)

30. (cancelled)

31. (cancelled)

32. (Previously presented) A spectroscopy system as claimed in claim 1, wherein
the tunable Fabry-Perot filter system comprises a MEMS tunable movable mirror
die and a fixed mirror substrate, which is bonded to the MEMS mirror die,
wherein the filter is edge bonded onto an optical bench.

33. (Previously presented) A spectroscopy system as claimed in claim 32, wherein the fixed mirror substrate extends below a bottom of the MEMS mirror die for attachment to the optical bench

34. (Previously presented) A spectroscopy system as claimed in claim 32, wherein the MEMS mirror die is separated from the optical bench and supported by the fixed mirror substrate.

35. (currently amended) A spectroscopy system, comprising:
a semiconductor source system for generating light to illuminate a sample;
a tunable Fabry-Perot filter system for filtering the light generated by the
source; and
a detector system for detecting the light filtered by the tunable Fabry-Perot
filter from the sample;

~~as claimed in claim 1, wherein the source system is a semiconductor source system, the spectroscopy system further comprises:~~

- an optical bench (B) to which the semiconductor source system and the tunable Fabry-Perot filter system are attached;
- a hermetic package (132) containing the optical bench;
- a temperature controller (134) for stabilizing a temperature of the semiconductor source system and the tunable Fabry-Perot filter system in the hermetic package.